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EXAMINER

CHUNG, DANIEL J

ART UNIT PAPER NUMBER

2672

DATE MAILED: 11/05/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/629,337

Applicant(s)

FOWLER ET AL.

Examiner

Daniel J Chung

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,7-12,16 and 17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 18 and 19 is/are allowed.
- 6) ☒ Claim(s) 1-3,7-12,16 and 17 is/are rejected.
- 7) ☒ Claim(s) 4-6 and 13-15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claims 1-19 are presented for examination. This office action is in response to the amendment filed on 8-18-2003.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 7-12 and 16-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Chang et al (5,040,130)

Regarding claims 1-2 and 9, Chang et al discloses that the claimed feature of a method for rasterizing primitives, comprising the steps of: determining if a primitive is totally outside [i.e. Fig 4C] a predetermined screen region [i.e. "clipping window" 42, 152 in visible side of Figs 3,7A] or at least partially [i.e. Fig 3A, Fig 4B, Fig 4D, Fig 7A] within the predetermined screen region, discarding the primitive if the primitive [i.e. edge 52c in Fig 4C] is totally outside the screen region [i.e. "visible side"] ("both vertex P1,P2 are dropped, neither is preserved for display", See col 6 line 24-28), finding at least a portion of

the primitive [i.e. Fig 3A, Fig 4B, Fig 4D, Fig 7A] that is inside the screen region if the primitive is not totally outside the screen region, filling ["area fill processor"; 29] only pixels in the portion of the primitive that is inside the screen region ("Z-axis extraneous edges must, therefore, be separately processed subsequent clipping but before the area fill stage to remove any unwanted line segments", See col 17 line 31-35; also see Fig 3, Fig 7, Fig 10-12, Abstract, col 3 line 14-27, col 9 line 60-col 10 line 18, col 17 line 59-65, claims 12 and 17), repeating the method steps for each primitive of a plurality of primitives ("repeating the above steps until all edges of the boundary-defined area are processed", See col 3 line 17-19, Also See "repeating steps" in claims), and the primitive is a triangle [i.e. Fig 11].

Regarding claims 10-12 and 16-17, claims 10-12 and 16-17 are similar in scope to the claims 1-2 and 9, and thus the rejections to claims 1-2 and 9 hereinabove are also applicable to claims 10-12 and 16-17.

Regarding claim 3, Chang et al discloses that using X,Y coordinate system; and determining values of XSTART,YSTART,XEND,YEND for the primitive, Providing values of XLEFT,XRIGHT,YTOP,YBOTTOM for the screen region; and comparing the primitive values to the screen region values to determine if the primitive is totally outside the screen region. (See Fig 3a-3c, Fig 4a-4d, Fig 5, Fig 7a, Fig 8a, Fig 9a) ["a method for clipping a line segment

boundary defined area [primitives] against a limiting plane [screen region] using the coordinate values of viewing region [42,152] and a primitive [40,150]"

Regarding claim 7, Change et al further discloses that the steps of: defining a start point on an edge of the primitive; determining if the start point is outside the screen region; edge walking the edge of the primitive from the start point to a boundary of the screen region; span walking a portion of the primitive inside the screen region and filling each pixel in the portion of the primitive that is inside the screen region. (See Fig 3a-3c, Fig 4a-4d, Fig 5, Fig 7a, Fig 8a, Fig 9a)

Regarding claim 8, Chang et al discloses that the primitive is a triangle and the start point is a vertex of the triangle. (See Fig 11)

**Claims 1-3, 7-12 and 16-17 are once again rejected under 35
U.S.C. 102(b) as being anticipated by Nicholl et al (5,455,897)**

Regarding claims 1-2 and 9, Nicholl et al discloses that the claimed feature of a method for rasterizing primitives, comprising the steps of: determining if a primitive is totally outside [i.e. Fig 6] a predetermined screen region [i.e. "window" in Figs 1-5] or at least partially [i.e. Fig 2] within the predetermined screen region, discarding the primitive if the primitive is totally outside the screen region ("an edge is said to be invisible if the whole edge is

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outside the window", See col 2 line 10-11, col 2 line 44-46, col 3 line 19-22), finding at least a portion of the primitive that is inside the screen region if the primitive is not totally outside the screen region, filling only pixels in the portion of the primitive that is inside the screen region ("the filling process that might be used after the polygon clipping process can be done correctly", See col 2 line 60-62), repeating the method steps for each primitive of a plurality of primitives, and the primitive is a triangle. (See Fig 1-5)

Regarding claims 10-12 and 16-17, claims 10-12 and 16-17 are similar in scope to the claims 1-2 and 9, and thus the rejections to claims 1-2 and 9 hereinabove are also applicable to claims 10-12 and 16-17.

Regarding claim 3, Nicholl et al discloses that using X,Y coordinate system; and determining values of XSTART,YSTART,XEND,YEND for the primitive, Providing values of XLEFT,XRIGHT,YTOP,YBOTTOM for the screen region; and comparing the primitive values to the screen region values to determine if the primitive is totally outside the screen region. (See Fig 1A, Fig 2, col 1 line 35-col 3 line 31)

Regarding claim 7, Nicholl et al further discloses that the steps of: defining a start point on an edge of the primitive; determining if the start point is outside the screen region; edge walking the edge of the primitive from the start point to a boundary of the screen region; span walking a portion of the primitive inside the

screen region and filling each pixel in the portion of the primitive that is inside the screen region. (See Figs 1-5)

Regarding claim 8, Nicholl et al discloses that the primitive is a triangle (notoriously well known in the art) and the start point is a vertex of the triangle. (See Fig 1-5)

Allowable Subject Matter

Claims 18-19 are allowed.

Claims 4-6 and 13-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The present invention is directed to a computer system for rasterizing primitives. The above claims identifies the uniquely distinct features "Defining first and second x direction values of 0 and 1, respectively, for an x direction XDIR in the coordinate system as, respectively, left to right and right to left relative to the screen region, and defining first and second y direction values as 0 and 1, respectively, for a y direction YDIR in the coordinate system as, respectively, top to bottom and bottom to top; determining that the primitive is totally outside the screen area if at least one of the following is logically true given a start point X=XSTART and Y=YSTART fro the primitive; XDIR AND ((X<XLEFT) OR (XEND>XRIGHT)), XDIR' AND ((X>XRIGHT) OR

((XEND>XLEFT)), YDIR AND ((Y<YTOP) OR (YEND>YBOTTOM)), YDIR' AND ((Y>YBOTTOM) OR (YEND<YTOP)). Incrementing Y if a first value, (((YDIR AND (Y>YBOTTOM)) OR ((YDIR' AND (Y<YTOP)))), is logically true; Incrementing X if a first value, (((XDIR AND (X>XRIGHT)) OR ((XDIR' AND (X<XLEFT)))), is logically true; repeating two above steps until the first and second values are not true, which identifies a beginning of a portion of the primitive that is inside of the screen region. The filling is finished when one of the following is true: (XDIR AND (X<XLEFT)), (XDIR' AND (X>XRIGHT)), (YDIR AND (Y<YTOP)), (YDIR' AND (Y>YBOTTOM))." The closest prior art, Nicholl et al (5,455,897) and Chang et al (5,040,130) discloses similar image processing system, either singularly or in combination, fail to anticipate or render the above underlined limitations obvious.

Response to Arguments

Applicant's arguments with respect to claims 1-19 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Chung whose telephone number is (703) 306-3419. He can normally be reached Monday-Thursday and alternate Fridays from 7:30am- 5:00pm. If attempts to reach the

examiner by telephone are unsuccessful, the examiner's supervisor, Michael, Razavi, can be reached at (703) 305-4713.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231


or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121
Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application
or proceeding should be directed to the Technology Center 2600 Customer
Service Office whose telephone number is (703) 306-0377.

djc
October 22, 2003



MICHAEL RAZAVI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600